

IN THE SPECIFICATION:

At Page 2, after Line 27, please add the following new paragraph:

FIGURE 2C is a cross-section of an aircraft with an exemplary morphing airfoil system of the present invention.

At Page 4, Line 11, through Page 5, Lines 21, please amend the existing three paragraphs and add a following new paragraph as follows:

FIGURE 2A shows an aircraft left wing 64 incorporating an exemplary embodiment of the present invention installed on an aircraft fuselage 60. In this view, from the forward end of the aircraft looking toward the wing 64, the upper airfoil 14 and the lower airfoil 18 are in a consolidated position near each other. In this exemplary embodiment, the upper airfoil 14 and the lower airfoil 18 are in contact with each other along their entire spans 32 and 33, respectively, from their roots 36 and 37, respectively, to their respective tips 34 and 35. The upper airfoil 14 and the lower airfoil 18 are in contact with each other along a separation surface 20 along the entire span of the wing 64. The upper airfoil 14 and the lower airfoil 18 are joined to the fuselage 60 at their respective roots 36 and 37. At the roots 36 and 37 is a morphing joint 66. By way of example, and not limitation, the morphing joint in the embodiment in FIGURE 2A includes a hinge ~~(not shown)~~ 67 that joins the fuselage 60 to the upper airfoil 14 and the lower airfoil 18. This permits the tips 34 and 35 of the upper airfoil 14 and lower airfoil 18 to be moved away from each other when the wing 64 is in a separated configuration as shown in FIGURE 2B described below. In the consolidated configuration, in this example, both the roots 36 and 37 and the tips 34 and 35 of the two airfoils 14 and 18 are near each other.

FIGURE 2B shows the wing 64 of FIGURE 2A in the separated position with the upper airfoil 14 separated from the lower airfoil 18 at an angle α , with the vertex of the angle α at the roots 36 and 37. The upper airfoil 14 is joined to the aircraft fuselage 60 at the morphing joint 66. The lower airfoil 18 is also joined to the fuselage 60 at or near the morphing joint 66. The morphing joint 66 (in this embodiment, a hinge 67) permits the upper airfoil 14 to separate away

from the lower airfoil 18 at their respective tips 34 and 35 while their respective roots 36 and 37 remain near each other where they are attached to the fuselage 60. Separating the upper airfoil 14 from the lower airfoil 18 by separating their tips 34 and 35 while keeping their roots 36 and 37 near each other results in the separation angle α between the airfoils 14 and 18. This produces a separation distance 24 between the tips 34 and 35. It will be appreciated that if an aircraft has two opposing wings, like the wing 64 in FIGURES 2A and 2B, the morphing wings form an "X" configuration when the upper airfoils 14 and lower airfoils 18 are in the separated position. The intersection of the "X" is at the fuselage 60 of the aircraft. It will be appreciated that the morphing wing 64 shown in FIGURE 2A and 2B may also accommodate a swing or stagger by accommodating movement or swing (not shown) of the upper airfoil 14 or the lower airfoil 18 forward or aft, or both. This results in separating their tips 34 and 35 parallel with their chords (not shown). Such movement of the tips 34 and 35 parallel to the wing 10 chords (not shown) is not visible in the front views (FIGURES 2A and 2B).

It will be appreciated that the morphing joint 66 may be any suitable mechanical or material joint joining one or both of the upper airfoil 14 and lower airfoil 18 to the fuselage 60 that permits the tips 34 and 35 of the upper airfoil 14 and lower airfoil 18 to be alternately near each other and separated away from each other. By way of example, and not limitation, such a morphing joint 66 may advantageously be a hinge ~~(not shown)~~ 67 attached to one of the upper airfoil 14 or the lower airfoil 18. Such a hinge suitably and relatively simply accommodates movement of the airfoil tips 34 and 35 towards each other and away from each other. Alternate morphing joints may include flexible materials, pivots, and hinges involving both airfoils 14 and 18. Typically the angle of separation α between the upper airfoil 14 and the lower airfoil 18 in a separated configuration with their tips 34 and 35 away from each other would be an acute angle.

In an alternate embodiment, shown in FIGURE 2C, the morphing joint of FIGURES 2A and 2B is a pivot 68 attached to the upper airfoil 14. The pivot 68 permits the upper airfoil 14 to pivot away from the lower airfoil 18. The upper airfoil 14, by way of example and not limitation, is driven towards and away from the lower airfoil 18 by a suitable drive mechanism 61, in this instance within the fuselage 60, linked to the upper airfoil 14 outboard of the pivot 68.